

**Expert Report  
of Dale Belman, Ph.D**

**Exhibit IX-3**

# Project Labor Agreements' Effect on School Construction Costs in Massachusetts

DALE BELMAN, RUSSELL ORMISTON, RICHARD KELSO,  
WILLIAM SCHRIVER, and KENNETH A. FRANK\*

This paper investigates the impact of Project Labor Agreements (PLAs) on school construction cost in Massachusetts. Although simple models exhibit a large positive effect of PLAs on construction costs, such effects are absent from more completely specified models. Further investigation finds sufficient dissimilarity in schools built with and without PLAs that it is difficult to distinguish the cost effects of PLAs from the cost effects of factors that underlie the use of PLAs.

## Introduction

CONSTRUCTION INDUSTRY PROJECT LABOR AGREEMENTS (PLAs) are collectively bargained pre-hire labor contracts negotiated between property owners and building trades unions. The essential features of PLAs are that successful bidders—even those operating non-union—must adhere to requirements for union referral, union security, and collectively bargained compensation. In exchange, unions assure timely access to labor and typically agree to harmonize work scheduling provisions among the trades, forego certain types of premium pay or pay increases, and give up the right to strike for the duration of the project. Building trades unions have increasingly used PLAs to protect and expand their position in construction markets. Open shop contractors and their trade organizations have responded with legal and political challenges to many publicly funded PLAs such as the Boston Harbor and New York State Thruway projects. The debate over PLAs has focused on project timeliness, quality, safety, training,

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\* The authors' affiliations are, respectively, School of Labor and Industrial Relations, Michigan State University, East Lansing, MI 48824; Department of Economics, The College of Wooster, Wooster, OH 44691; School of Architecture and Design, University of Tennessee, Knoxville, Knoxville, TN 37996-2400; Construction Industry Policy and Research Center, University of Tennessee, Knoxville, Knoxville, TN 37996-4150; College of Education, Michigan State University, East Lansing, MI 48824. E-mails: [drdale@msu.edu](mailto:drdale@msu.edu); [ormiston@msu.edu](mailto:ormiston@msu.edu); [rkelso1@utk.edu](mailto:rkelso1@utk.edu); [schriver@utk.edu](mailto:schriver@utk.edu); [kenfrank@msu.edu](mailto:kenfrank@msu.edu). The authors thank Matthew Bodah, David Weil, Peter Berg, the members of the Construction Economics Research Network, and an anonymous referee for comments on earlier versions of this paper. Data collection was supported by a grant from the Center to Protect Workers' Rights. The data are available from the corresponding author, Dale Belman.

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minority employment, employee benefits, and labor peace; however, the central issue has been their effects on public construction costs. The zigzags in federal policy on PLAs over the last 20 years reflect the intensity of this debate.<sup>1</sup>

The current research investigates the effect of PLAs on the cost of new school construction in Massachusetts between 1996 and 2002. Using models with few explanatory variables, prior research on school construction found that PLAs increased bid price between \$12.91 and \$25.67 per square foot, or 14–17 percent in the Greater Boston area (Bachman et al. 2003). A concern with leanly specified models is that the PLA variable may proxy omitted characteristics that also influence construction costs. To correct for this, the current authors collected unique data on new school construction in Massachusetts. Using these detailed data, we develop a more complete model of school construction costs incorporating information on features such as swimming pools, mechanical systems, non-classroom space, and athletic facilities that architects and engineers use to estimate project costs. Our initial estimates suggest that (1) much of the PLA effect is attributable to the higher costs of building within the city of Boston and (2) although PLAs are associated with substantially higher costs in leanly specified models, there is not a statistically significant relationship between the PLAs and construction costs in more complete models.

Although more completely specified models are preferred in establishing the *ceteris paribus* effect of PLAs, our research finds substantial multi-collinearity between the PLA variable and measures of school characteristics in the more complete models. This is a product of the relationship between project complexity and the decisions to use a PLA; more complex and expensive projects are more likely to use PLAs. In combination with the relatively small number of observations in construction data sets, this precludes accurate estimation of cost effects of PLAs in an adequately specified model. In essence, using extant data it is not possible to estimate the effect of PLAs *holding all else equal*.

### Background and Research on PLAs

Although nascent PLAs date to World War I, PLAs came into widespread use following World War II on atomic energy, defense, and space projects

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<sup>1</sup> PLAs were widely used as a federal contracting tool from the 1950s on. President George H. W. Bush barred use of PLAs on new federal or federally funded projects immediately prior to the 1992 election (Executive Order 12818). President Clinton revoked 12818, restoring the prior status quo, in early 1993 (Executive Order 12836). This was augmented in 1997 with a memorandum providing criteria for use of a PLA and the minimum terms to be incorporated into an agreement. President George W. Bush banned the use of PLAs on federal projects shortly after taking office in 2001 (Executive Order 13202). In turn, President Obama revoked 13202 and restored the use of PLAs in federal contracting on February 6, 2009.